The full depiction of the present forest stand conditions in the KRNCA requires an understanding of the logging history of lands under private ownership that have been acquired by the BLM. The present public land acreage in the KRNCA is the product of a major land tenure adjustment program conducted in the 1970s and 80s. During this period, over 25,000 acres of private land was acquired through exchange and purchase. Most of the acquired lands had either been harvested historically, or were cut just prior to BLM acquisition. Harvest methods included high grading, or removal of the best trees, leaving scattered large Douglas-fir trees. Reforestation was not practiced and a large percentage of the previously harvested acreage was left to regenerate naturally. Tanoak and madrone now dominate many lands that had once been old-growth Douglas-fir forest. Several areas were planted upon acquisition by the BLM, including the Bear Trap Creek (125,000 Douglas-fir trees on 200 acres since 1985), and Nooning Creek (500,000 Douglas-fir seedlings).

In addition to timber, there are other special forest products utilized in the KRNCA, including the harvesting or collecting of mushrooms, firewood, beargrass, and other specialty products. None of these activities constitute major economic uses, but may be of cultural and/or subsistence value to the subgroups involved in their collection. Management decisions that affect availability of these products could have substantial effects on these communities. Demand for permits fluctuates somewhat from year to year, depending on the quality of the resource, but has remained fairly steady overall. Local residents have also expressed an interest in the continued availability of these products on a sustainable basis.

3.11.2 Applicable Regulatory Framework/Current Management

Authority for harvesting and sale of timber and other vegetative products on public lands is described under the Code of Federal Regulations Subpart 5400, Sale of Forest Products. Management direction and land use allocations for KRNCA forest resources is contained in the Northwest Forest Plan (NWFP) (1994) which amended the KRNCA Management Program. As stated above, under the NWFP, the KRNCA is managed as a late successional reserve (LSR) land use allocation. The purpose of these reserves are to represent a network of old-growth forests retained in their natural condition with natural processes allowed to function (including fire) to the extent possible. They are designed to serve a number of purposes including:

- Provide a distribution, quantity, and quality of old-growth forest habitat sufficient to avoid foreclosure of future management options.
- Provide habitat for populations of species associated with late successional forests.
- Help ensure that late successional species diversity is conserved.

Silvicultural treatments in late successional reserves must be "beneficial to the creation and management of late-successional forest conditions," such as to help restore old-growth ecosystem conditions (1994 USFS and BLM Record of Decision for Late-Successional and Old-Growth Forest Standards and Guidelines). Objectives of silvicultural treatments include: 1) Development of old-growth forest characteristics including snags, logs on the forest floor, large trees, and canopy gaps that enable establishment of multiple layers and diverse species composition. 2) Prevention of large-scale disturbances by fire, insects, wind, and diseases that would destroy or limit the ability of the reserves to sustain viable forest species populations.

Under the NWFP, stand management in late successional reserves can include thinnings, underplanting, killing trees to create large woody debris, reforestation, and planting. In response to the NWFP, the BLM completed a Late Successional Reserve Assessment for the KRNCA in June, 1998.

3.11.3 Existing Conditions

3.11.3.1 Forest Stand Characteristics

The major forest vegetation type is a mixed evergreen forest of Douglas-fir/tanoak/madrone. Due to the unusual climatic factors in the area, including the hot offshore winds in the summer and the associated absence of fog, it is thought that historic vegetation patterns were shaped primarily by moisture availability and the prevalence of lightning-caused and/or indigenous use of fire. Large continuous stands of late-successional or old-growth forests are thought to have been absent from this area (BLM 1998, citing Barbour and Majors 1977). (See Section 3.10, Terrestrial Habitats, for more detailed description of the species common in forest habitats.)

Though fragmented due to past land use practices, the KRNCA contains the second largest aggregation of old-growth lowland mixed evergreen forest in the California Coast Province. Figure 3-14 shows the vegetation by seral stage. The large areas of young hardwood dominated sites covering previously harvested lands in the KRNCA contribute little in the way of late successional old-growth values. These stands became established as a result of timber harvesting practices without any additional follow-up treatments. As a result these stands are lacking the necessary structure and species components to develop into the late-successional forest characteristics in the foreseeable future. On these sites additional forest treatments are desirable if the objective is to accelerate these hardwood stands to a more diverse late-successional stage. They are also extremely dense with heavy fuel loading (BLM 1998).

3.11.3.2 Mushrooms

While not much is known about the specific locations and other important population characteristics of mushrooms found in the KRNCA, it is known the area has at least 57 species of edible and/or commercially valuable mushrooms. Some of these include matsutake (*Tricholoma magnivelare*), chantrelles (Cantharellus cibarius), oyster mushrooms (*Pleurotus ostreatus*) and king boletes (*Boletus edulis*), which can fetch high prices in local and foreign markets. Matsutake are especially valuable and are used for ceremonial purposes in Japan. Three species of chanterelles, two species of hedgehog mushrooms and two species of coral mushrooms found in the KRNCA are managed as "Survey and Manage" species under the Northwest Forest Plan.

Mushrooms vary greatly in occurrence, abundance, and distribution from year to year and numerous factors influence fruiting. Forest age, composition, and structure likely constitute a major influence on wild mushroom occurrence and productivity. For example, in the King Range matsutake occur mostly in closed-canopy tanoak stands (50-150 years old) with scattered Douglas-fir, madrone, and knobcone pine (Hosford et al. 1997). Forest management that affects the extent of this type of habitat could influence matsutake abundance and distribution. A variety of wildlife species, including deer and elk, consume wild mushrooms, but little is known about their role in these animals' diets.

In the KRNCA, mushrooms generally are collected within a relatively short distance from roads (i.e., people do not hike extensive distances to get to patches, particularly for commercial use), such as King Range Road, King Peak Road, Saddle Mountain Road. Collecting occurs primarily in tanoak stands. Harvesters generally operate independently, and sell the mushrooms they collect to wholesale buyers who set up shop in local motels during the mushroom season. Prices can fluctuate widely, depending on seasonal variations and regional availability, etc.

Interest in mushroom collecting is on the rise, particularly since the 1980s, as is international demand for matsutake in particular.[21] With the overall decline of timber industry, increasing demand, and high value for the mushrooms, more people are picking commercially than in the past. Yet a great deal of scientific uncertainty exists regarding effects of harvest on mushroom ecology, diversity, reproductive habits, etc. Some biologists liken harvesting mushrooms to picking apples off trees, having no effect on the trees' productivity from year to year. Others express concern about potentially harmful activities, such as raking, trampling, or improper harvesting techniques, that could adversely affect the mycelium and reduce regeneration. While careful harvesting of mushroom caps and other portions of a mushroom's mycelium may avoid permanent damage to individual plants, there is growing concern that a large increase in harvesting and/or damage caused by uneducated or careless collectors could cause major adverse impacts to the KRNCA's mushroom populations. The USFS Pacific Northwest Research Station currently has a research program investigating productivity and sustainable harvest information for edible mushrooms in the region.

3.11.3.3 Other Specialty Forest Products

Other specialty forest products harvested in the King Range include madrone, tanoak, and Douglas-fir collected and used as firewood. The BLM currently issues firewood collection permits on a case-by-case basis, usually for collection of downed wood on roadways after storms. Salal, huckleberry shrubs, and bay leaves are also collected from time to time, mostly for use in floral arrangements. Salal has attractive, dark green leaves and bell-shaped pink or white flowers and berries that hang like a necklace. The berries and leaves of the huckleberry are also attractive, and along with salal are collected for flower arrangements. Bay leaves are a popular spice for cooking and can be used to make wreaths. In addition, beargrass is collected by a small number of people for traditional basket-making and other indigenous crafts; please see the Cultural and Historic Resources section (Section 3.4) for further discussion.

3.11.4 Current Management Practices

3.11.4.1 Forest Management

The potential timber harvest base was initially reduced through the 1988 designation of sections of the KRNCA as Wilderness Study Areas. Then, after the listing of the northern spotted owl as a threatened species, the remainder of the KRNCA was designated as a late successional reserve under the Northwest Forest Plan (NWFP) in 1994. This land use allocation does not prescribe/allow timber harvesting,

[21] Japan began importing matsutake in mid-1970s, and this demand has increased dramatically since the mid-1980s. Imports from North America averaged 500,000 kg/year in 1997. Note that the King Range is south of the heaviest areas of commercial matsutake harvest, which are more in the Klamath Range and then north through the Cascades in Oregon to the Olympic Peninsula in Washington, as well as farther north in Canada (Hosford et al 1997).

although thinning and other silvicultural treatments may be used in stands up to eighty years in age if the treatments are beneficial to the creation and maintenance of late successional old growth (LSOG) conditions (NWFP ROD at 8).

Under the NWFP, the King Range and adjoining lands in the planning area have 45,437 acres designated as late-successional reserves. Of these, 12,147 acres provides LSOG habitat (32 percent). An additional 15,688 acres are administratively withdrawn (i.e., already designated by existing plans), of which 4,622 acres contains LSOG habitat (21 percent). These administratively withdrawn lands are treated the same as late successional reserves for the purposes of management under the NWFP. The administratively withdrawn lands are on the western coastal slope which contains significantly less LSOG forest. A small parcel, 142 acres (Honeydew Creek Campground parcel) is classified as matrix, which technically allows timber harvest; however, this parcel contains a mixture of riparian forest and oak woodlands with no commercial timber. The forest resources in the King Range are currently managed to maintain and/or enhance late successional stand characteristics consistent with the NWFP.

Current management efforts are focused on improving the structure of previously-harvested, dense hardwoods stands to meet LSR objectives and better reflect historic vegetation conditions. Data collected in 1948 in the Honeydew Creek Watershed, prior to any large scale timber harvests, suggests a historic successional stage class distribution of approximately 60 percent late successional or old-growth stands, 20 percent mid-mature stands and 20 percent early successional stands (BLM 1996). This stand class breakdown will be used as a reference condition for forest management activities in this plan. Thinning treatments can be used to treat previously harvested stands to accelerate their development to late successional characteristics. Thinning of some forest stands is a desirable method of increasing the forest stand's structural complexity and thereby developing late successional forest characteristics. Treatments involve stem-density management and tanoak removal in sapling, pole, and early mature stands. All treatments provide for the retention of snags and large woody debris for the development of stand structure and diversity.

3.11.4.2 Special Forest Products Management

All specialty forest products are managed via a permit system, and the BLM generally issues between 50-80 permits per year for all uses. Permits are available for collecting almost any kind of greenery, as long as it is not an ecologically sensitive species. Mushrooms have a special permitting program because of their high commercial value.

The BLM issues both commercial and individual/personal permits for mushroom collecting, modeled on the U.S. Forest Service's permit program, and tries to coordinate with that agency so as to have similar specifications. These permits are not species-specific, but allow collection of any kind of mushroom under the conditions of the permit. Permittees are given a map for locations and special instructions and restrictions for collection (no driving off-road, no raking, etc.), and are required to post the permit on their windshield while collecting so that a passing ranger can see it.

Most of the commercial permittees in the KRNCA are Southeast Asians (Hmong/Laotians).[22] Commercial permits are issued during a season of four to six weeks around the month of December (when the valuable matsutake are fruiting), and at any given time there are only thirty permits available. This limit is intended to prevent adverse effects on the resource while much is still unknown about the ecological effects of collection. Permits are available for a varying number of days, i.e., three, seven, or thirty days, or for the whole season, at a cost of $25/week or $100/season. According to BLM staff, people seem relatively content with this system. There is no weight limit on the amount one can collect with a commercial permit. The BLM requires one permit per commercial collector; whole families are not allowed to collect on a single permit.

Individual, non-commercial collection permits are allowed year-round, and are limited by weight at five pounds per day. Personal use collectors must cut matsutake mushrooms in a particular way so that they have no commercial resale value. Personal users are mostly locals who have become interested in mushroom collecting. Their numbers have gradually increased in recent years, but can fluctuate unpredictably from year to year.

In contrast, demand from commercial collectors is directly related to the prevailing market for mushrooms and the weather in December, the only month when commercial permits are available. Buyers set up shop in Garberville or Redway; it is unknown how collectors connect with sellers or distribute the mushrooms. BLM staff have not encountered any tension or violence with regard to collectors "claiming" particular territories.

The BLM also issues occasional firewood collection permits, primarily as a way to clear downed wood from roadways after a storm. Permittees can collect any wood that has been blown down and that can be reached without driving off the road. No cutting of standing trees is allowed. The BLM generally will issue up to ten permits per storm on a case-by case basis, and there is almost always a waiting list of people interested in permits. Commercial beargrass collection permits are also issued, usually about ten to twelve per year, at $20 per permit.

3.12 GRAZING

3.12.1 Introduction

Use of the King Range for livestock grazing goes back to the earliest Euro-American settlers in the area, but the actual grazing-dependent ecology of California grasslands goes back much further. Grassland-grazing ecology in California evolved with native mammalian megafauna from ten thousand years to as far back as millions of years ago. The north coast of California has produced fossil evidence of mastodon, bison, and mammoth dated between 100,000 to 500,000 years old. Modern cattle (and much of modern grassland flora) were brought to California by the Euro-Americans in the mid-1700s (Burcham 1981) and are not native. However, their effect on grasslands, when properly managed, can mimic the impacts of prehistoric and native megafauna.

[22] Amaranthus and Pilz (1996) note that "recent immigrants can harvest mushrooms profitably without the language skills and education required for other jobs" (at 45). Also many wild mushrooms (particularly matsutake) collected commercially are sold to Asian markets, both in Japan and in Asian communities across the western U.S. and Canada, and so there may be some traditional/cultural connections to the activity as well.

Light to moderate grazing in productive grasslands and during the proper season can conserve the biodiversity of plants and wildlife. An inverse relationship exists between dominance and diversity regardless of the plant community described. If dominant plant species can be reduced in some manner, rare and infrequently encountered (i.e., subdominant) species can increase. Generalist grazers such as domestic cattle and bison tend to increase species diversity by reducing dominant species through non-preferential foraging. In contrast, non-generalist grazers such as deer, rabbits, and voles can decrease biodiversity because they eat selectively which can heavily impact subdominant plant species. When considering biodiversity in grasslands, these kinds of non-generalists can be harmful without light-to-moderate grazing from large ungulates, domestic or otherwise. Failure to permit some grazing in productive grasslands typically results in dramatic decreases in subdominant plant species diversity (Howe 1999).

Sustaining healthy biodiversity depends on balance. In the King Range, there is light to moderate grazing in portions of the grasslands, and although there are deer, rabbits, and plenty of rodents, there are also large populations of raptors such as hawks, vultures, and falcons, as well as coyotes, bear, mountain lion, and other predatory animals that help balance subdominant grazers.

3.12.2 Applicable Regulatory Framework

Grazing Use for the King Range planning area is regulated by the Code of Federal Regulations, Part 4100—Grazing Administration and the Northwestern California Standards for Rangeland Health and Guidelines for Livestock Management. Grazing use will be consistent with the goals and objectives described in the King Range Act of 1970 (PL 91-476).

3.12.3 Existing Conditions and Management Practices

3.12.3.1 Early Grazing History

The BLM does not have records for grazing use prior to the 1950s, but there are anecdotal reports of year-round sheep grazing numbering into the thousands on private lands in the area. Since roughly 1900, sheep and wool production had been increasing all along the North Coast, as predation by coyotes was controlled for decades by government-sponsored predator control programs (Roscoe 1977). By 1920, fully one-third of the ranchland in Humboldt County had converted to wool production, with a woolen mill constructed at Eureka exporting up to 500,000 pounds of wool annually (Nash 1996). But by the 1950s and '60s the changing state environmental laws and the end of federally-sponsored predator control programs pushed many operators away from sheep, despite high wool prices, and into cattle markets (Criley 2003).

This trend wasn't immediately evident in the King Range; in 1983 there were still about 1300 sheep on public lands, in addition to about 300 cattle. However, over the coming decade, sheep grazing did gradually phase out, and by March of 1994, the last 60 sheep were gone leaving cattle as the sole livestock type.

By 1983, the BLM had acquired a number of new parcels that included active grazing lands, and so issued a number of new grazing leases. These leases authorized a total of 2,971 Animal Unit Months (AUMs) within the KRNCA, and are the same allotments that are still in effect today. Since 1983, BLM has reduced the number of AUMs authorized to 2,050, representing a decrease of 921 AUMs. This reduction resulted partly from the expiration of leases in several allotments that were never authorized (Big Flat at 60 AUMS), or that had converted back to forest types unsuitable for grazing (Bear Trap 400 AUMS, Etter Lease 8 AUMS, and Jewett Ridge 13 AUMS), representing a total of 483 AUMs. These inactive allotments are discussed further in Section 4.15.4. Of the remaining 440 AUMs, 300 AUMs were reduced at the Strawberry Rock allotment and 255 AUMs reduced at Windy Point allotment, where livestock numbers and the season of use were reduced to promote resource health—leaving a deficit of 115 AUMs. This is accounted for by a 115 AUM increase in the Spanish Flat allotment.

3.12.3.2 Current Allotments, Use and Conditions

Approximately 11,100 acres of the KRNCA are currently grazed, divided into four allotments (see Figure 3-15). A total of 2,050 AUMs of forage is available for domestic livestock use; however, approximately 1,500 AUMs are actually utilized in an average year, by about 220 cattle. Lessees on the four allotments are issued ten-year leases, which are reviewed before being renewed. These leases contain terms and conditions that define grazing intensity and season of use required to meet rangeland health standards or any other pertinent resource objective.

- **Strawberry Rock Allotment:** 550 acres, 300 AUMs, 37 yearlings/cow calf pairs; season of use: Sept. 15 – May 15. Actual use in 2002: 38, 9/10-5/23, 320 AUMs. All standards and guidelines for rangeland health received a "met" rating as of November 1998.
- **Windy Point Allotment:** 300 acres, 105 AUMs, 6/cow calf pairs; season of use: September 15 – May 15. Actual use in 2002: "non-use." All standards and guidelines of rangeland health were "met" as of December 1998.
- **HJ Ridge Allotment:** 1,160 acres, 540 AUMs, 50/95 yearlings/cow calf pairs; season of use: #50 at Oct. 1- Feb. 28 and #95 at March 1 – June 15. Actual use in 2002: 44 cattle, 1/11-6/29, 241 AUMs (actual use on this allotment has run at half or less of the AUMs capacity allowed for by the lease since 1989). All standards and guidelines of rangeland health received a "met" rating as of November 1998 with the exception of the Riparian/Wetland standard which received a "not met and not progressing towards" rating. Failure to meet this standard was based on the following: "The one lentic site identified as not meeting the standards is a trampled, seasonal water collection area that as far as anyone's living memory, has always appeared as it does today. It should be noted that this is a very small site approximately 30 square feet in size in an allotment 1160 acres in size. The priority for corrective action was determined to be low.

  Spanish Flat Allotment: 9,100 acres, 1,105 AUMs, 145 yearlings/cow calf pairs; season of use: November 1 – May 31/June 30. Actual use in 2002: 129, 11/25 – 6/30, 912 AUMs. A rangeland health assessment was completed for this allotment in December 1998. The Biodiversity standard was "met," the Soils Health and Riparian/Wetland standards were "not met but progressing towards," and the Water Quality standard was "not met and not progressing towards."

  The water quality standard was "not met and not progressing towards" for reasons that may be

independent of livestock grazing. Summer water temperatures in Cooskie Creek tend to exceed state water quality standards which may be caused by the bedrock of the stream, the morphology of the watershed, and annual winter flushing of the system including any new stream bank vegetation. It is unknown if grazing is impeding to some degree, the natural rate of recovery for the watershed.

The Soils Health standard was found to be "not met but progressing towards" because of the following: "Soils are generally healthy over most of the area. However, in the uplands there are problems with lack of plant cover which leaves areas susceptible to wind and rain erosion. This condition may have been created or exacerbated by historical overgrazing by sheep, or it is possible that a degree of ridgetop vegetation reduction is natural. There are rills and numerous gullies that are actively eroding in many areas. Granted, this grazing allotment is very steep so inherent gullying is likely. It does not appear, however, that current levels of grazing use are contributing to these conditions. Residual dry matter was collected in all the key grazing areas and lbs/acre exceeded all guidelines for residual mulch, the mean being about 3,000 lbs/acre."

The Riparian/Wetland standards were "not met but progressing towards" for Cooskie, Spanish, and Randall Creeks. A full length analysis was included in the 1998 Environmental Assessment.

Since this rangeland health assessment, half of the Spanish Flat allotment has not been grazed due to cultural and water quality issues. Cooskie Creek has been fenced and the Spanish Flat pasture, that includes Spanish and Randall creeks are being rested.

3.13 FIRE MANAGEMENT

Past fires have been instrumental in shaping the current vegetative patterns and fuel conditions on the KRNCA. Fire will continue to be a key element of vegetative conditions in the area, particularly for maintaining or improving grasslands, chaparral, and other fire-adapted communities. Despite these beneficial aspects, fire—particularly very hot and intense fires—can also be a negative force, posing a serious threat to the human improvements, visual opportunities, wildlife, and vegetative communities existing throughout the area.

3.13.1 Applicable Regulatory Framework

The BLM is the principal agency responsible for fire protection in the KRNCA. To fulfill its responsibility for fire protection, the agency has entered into a cooperative fire protection agreement that includes BLM-California and Nevada; U.S. National Park Service, Pacific-West Field Area; U.S. Forest Service, Regions Four, Five and Six; and the State of California Department of Forestry and Fire Protection (Cooperative Protection Agreement 1997). An extension of this agreement is the preparation and execution of an annual operating plan between the BLM field offices (Arcata, Bakersfield, Redding, and Ukiah), the CDF Northern Region and U.S. Forest Service, Mendocino National Forest. This agreement sets the framework for CDF to provide resources for the suppression of all wildfires occurring within the KRNCA. A BLM fire resource unit provides for prevention/suppression in addition to CDF. Specific regulations and agreements that affect fire management include:

- BLM Handbook H-9211-1 Fire Management Activity Planning
- BLM Handbook H-9214-1 Prescribed Fire Management Handbook
- Cooperative Fire Protection Agreement between BLM and CDF (January 1, 2002)
- Cooperative Fire Protection Agreement Operating Plan between BLM, CDF Northern Region, and U.S. Forest Service (2002)
- King Range Fire Management Plan (1992)

3.13.2 Existing Conditions

3.13.2.1 Historic Fire Patterns

Throughout all of California, lightning fires have occurred naturally for untold years. Native Americans have existed in this area for at least 2,000 years and used fire to actively manage the landscape. The earliest U.S. settlers and ranchers came into the area about 1850, and also burned grasslands to improve range for their cattle and sheep, yet the use of fire gradually decreased as the area became more settled, and active suppression of wildfires increased.[23] Research conducted in the neighboring Sinkyone Wilderness State Park indicates that coastal prairie areas were historically more prevalent; about 300 acres of this vegetative type exist today, but evidence shows that it covered roughly 450 acres during earlier periods (Bicknell, Biggs, Godar, and Austin 1993). This research suggests that the reduction in this type of fire application (broadcast burning) has contributed to encroachment of other species into the grassland areas that exist today.

Fire frequency and fire interval research has not been conducted specifically on the KRNCA. However, some parallels can be found in research conducted in the Douglas-fir and coast redwood forests at Point Reyes National Seashore (Brown, Kaye, and Buckley 1999). Examination of charcoal layers in the soil revealed a pattern of frequent surface fires in the area over a period of several centuries, with a mean return fire interval, or fire frequency, averaging between eight and nine years. These fires functioned to maintain more open forest stands by killing young trees before they could become established. Frequent fires on forest margins also would have tended to maintain the relative position of forest/grassland or forest/scrubland ecotones. The study concluded, "Historical references and records of vegetation patterns on the California coast in the vicinity of Point Reyes document less forest on the coastal hill than at present."

The study also found that interruption of this fire cycle had caused shifts in forest structure and changes in fuel loads, leading to stand replacement crown fires which have become more prevalent in recent times: "In the absence of human ignitions, it is likely that fires would not have been as common. Lighting ignitions are rare for this area, especially during the later summer/early fall period when grasses and herbaceous fuels cure and the majority of fires occurred. However, regardless of the source of ignitions in pre-settlement or early settlement fire regimes, forests of the Point Reyes Peninsula are not burning today with nearly the frequency they did in the past. Shifts from understory to overstory dominance, increases in fuel loads, and changes in forest structure (i.e., increases in "ladder fuels") may

[23] Also see ethnographic information in Appendix of Honeydew Creek Watershed Analysis (BLM 1996), with interviews of old-time residents talking about set fires and frequency.

lead to increased incidence of overstory, stand-destroying fires that have been documented in other forests that experienced frequent surface fires prior to widespread non-Native American settlement (e.g., Covington et al. 1994). Conversion of grasslands to forest also will continue in the absence of fires" (Brown, Kaye, and Buckley 1999). These conditions are similar to the existing conditions today in the KRNCA.

3.13.2.2 Current Fuel Conditions

No existing data is available for determining fuel load conditions and no current sampling is planned. However, local fire management personnel estimate that current fuel loads exist in a range that varies from 80 to 200 tons/acre. Visual observations reflect a variety of fuel conditions, including areas having both sparse and heavy duff/litter layers. Some areas have little to no existing ladder fuels, while other areas have very heavy ladder fuels, conditions that allow wildfire to reach into the canopy structure of stands.

3.13.2.3 Recent Fire History

An examination of large wildfires (300+ acres) that occurred in the KRNCA area between 1950-2001 reveals a total of 18 fires, or an average of 0.35 large wildfires per year (see Figure 3-16). These fires were mostly started during extreme drought periods and/or periods with heavy dry lightning concentrations, and often under northeast to east wind conditions. The King Fire of 1990, which burned about 3,500 acres within the KRNCA boundary, occurred when roughly 35 individual lightning fires came together to form a single large fire. An example of a human-caused fire was the Saddle Mountain Fire of 1988, burning about 6,000 acres within the area. The Finley Creek Fire of 1973 was also human-caused; it began on private land and burned into the KRNCA, covering a total of about 11,000 acres with approximately 2,500 acres burning in the KRNCA.

Most recently, a thunderstorm on September 3, 2003, resulted in 59 lightning-ignited fires in Humboldt County. Most of these fires were contained within the first week; however, due to remote and extremely steep terrain, two fires, the Honeydew Fire in the KRNCA, and the Canoe Fire in nearby Humboldt Redwoods State Park, proved difficult to control. Both fires continued to grow, and by the time they were each contained, the Canoe Fire had burned 11,200 acres, and the Honeydew Fire burned 13,778 acres. Suppression costs for the two fires exceeded $34 million, with an estimated 40 percent ($13.6 million) expended on the Honeydew Fire.

The 2003 Honeydew Fire was the largest ever recorded in the King Range NCA, burning almost 14,000 acres.

The Honeydew Fire was a 100-year event for the KRNCA. The entire fire burned in the King Range Wilderness Study Area (WSA). Extreme fire behavior threatened the community of Shelter Cove, so approximately four miles of bulldozer lines were constructed within the WSA. Preliminary observations indicate that the fire was a stand-replacing event over large portions of the burn area.

During the period of 1981-2003, a total of 44 fires were reported to have occurred on the KRNCA. Humans caused all but eight of these fires. No fires were reported on the King Range during the years 1980, 1982, 1985, 1986, 1987, 1989, 2000, and 2002 (see Appendix F for detail). Table 3-18 represents a summary of the size in acres and cause for fires that occurred during the 23-year period.

Table 3-18: Fire Size by Acre Distribution and Cause (Classification, 1980-2003)

SIZE BY ACRES	HUMAN	LIGHTNING	TOTALS
0 – 10	29	4	33
11 – 100	3	1	4
101 – 300	1	1	2
301 –1000	2	0	2
1001 +	1	2	3
Totals	**36**	**8**	**44**

A breakdown of these wildfires by size class reflects an average of 1.91 fires of all sizes per year for this period. Of the 44 fires, 33 fires ranged between 0.1 and 10 acres in size, with 19, or slightly under half, burning in the 0.1-acre category. An average of 0.22 fires per year was found to occur when combining all of the size classes greater than 300 acres.

The number of wildfires reported on the KRNCA is rising as reflected by data in Table 3-19, which reflects the number of incidents on a decadal basis, by human and lightning causes:

Table 3-19: Distributions of Wildfires by Decadal Period and Cause Classification

PERIOD	HUMAN	LIGHTNING	TOTALS
1980 - 89	6	0	6
1990 - 99	25	3	28
2000 - 03	5	5	10
Totals	**36**	**8**	**44**

Two decades of fire history are represented in Table 3-19 beginning with the year 1980. The period of 2000-03 (only four years) has been added to bring the number of incidents in alignment with the total numbers of incidents reflected in Table 3-18. It can be seen from the values in Table 3-19 that lightning occurrences are not very common. This fact is also reflected by the data from the study reports cited above. However, the number of human-caused fires is significant. Humans caused 36 of 44 fires (82 percent) of the total fires that have occurred over the 24-year period. Some years there have been no incidents reported. However, it is evident from this data that human caused fires are increasing. There is a four-fold increase in human caused fires in the 1990 decade when compared against the 1980 decade.

Recreation use has increased along the coastal strip greatly since the KRNCA was established. With this increasing use, a corresponding increase in human caused wildfires has occurred along the coast. To try to reverse this trend, in 2002 the KRNCA began providing the services of a backcountry ranger. That year the ranger extinguished approximately 24 illegal or unattended campfires. Those fires were found mostly in the beach area and were in a smoldering state. There were no wildfires ignited by recreation visitors during the first year of this program. It should be noted that although the majority of human caused wildfires in the KRNCA have been caused by recreation visitors, almost all of these fires have been small and limited to the coastal slope. In contrast, most of the large devastating wildfires began on private lands east of the KRNCA and spread onto public lands, or from lightning strikes on the ridgetops. This can be attributed to the fact that severe fire conditions are associated with offshore wind conditions.

The data presented above points to a situation where increased human use simultaneously increases the potential of fire starts beyond naturally-occurring lightning events. Increasing numbers of fires also increase the concern that large damaging stand-replacement fires will occur. The combination of steep terrain and heavy fuel accumulations (excessive stems per acre, ladder fuels, and dead and down fuels) set the stage for such fire events to occur. This is particularly so under extreme drought and lightning conditions that periodically occur throughout this area because of natural weather phenomena.

3.13.3 Current Management Practices

3.13.3.1 Presuppression

The BLM has undertaken a gradual increase in developing a fuels management program. Some efforts have begun on the coastal prairie grassland areas to reduce the Douglas-fir encroachment. The activities have included removal of Douglas-fir saplings and small pole-sized trees to eliminate competition. Little to no prescribed fire (broadcast burning) applications have occurred. Instead, slash has been cut, piled,

and burned, which is labor intensive and costly work. A shaded fuel-break system is an integral part of BLM's suppression planning, and is approximately twenty miles long. The system is currently about 55 percent completed (see Figure 3-16).

Past use of prescribed fire (broadcast burning) by the BLM has been very limited. Areas do exist providing the opportunity to use prescribed fire (broadcast burning and pile burning) to reduce tree and brush encroachment into existing coastal prairie areas. There are other areas that have opportunities for the use of prescribed burns. Areas adjacent to shaded fuel-breaks could be treated to enhance the beneficial aspects of the fuel-breaks by using prescribed fire applications. Some areas exist along the wildland-urban interface where prescribed fire could be used to protect against wildfires encroaching into or from private land holdings when coupled with shaded fuel breaks (see Figure 3-16).

As mentioned earlier, in 2002 the BLM added the position of backcountry ranger, which supplements its ongoing fire prevention program. The program depends heavily on fire prevention signing and personal contact with local residents and other users of the KRNCA.

3.13.3.2 Suppression

CDF, by agreement with the BLM, has the principal responsibility for suppressing wildfires. CDF has a station located just west of Honeydew, and a second one in Whitethorn. The BLM has an engine at the King Range Fire Station located just west of Thorn Junction. There are other resources available from CDF such as an air tanker at Rohnerville and a helitack and helicopter unit at Kneeland. Additional engines, hand crews, and aircraft suppression resources are available as needed. The Cooperative Fire Protection Agreement is the legal structure for all suppression agencies to provide resources when needed. This agreement is connected to what is nationally referred to as the "total mobilization concept." Access for suppression resources into the entire KRNCA is somewhat limited by its extreme ruggedness, remote nature, and steep topography.

3.14 TRAVEL MANAGEMENT

3.14.1 Introduction/Overview

The region surrounding the KRNCA became known as "the Lost Coast" based on the difficulty of road building across the area's rugged landscape. Highway engineers building California Coastal Route 1 were forced inland by the harsh terrain at the southern end of the Lost Coast, about 20 miles south of the KRNCA. U.S. 101, the primary access route through northwestern California, passes 20 miles inland from the KRNCA. Only steep winding secondary roads penetrate the remote mountains of the Lost Coast region. Three Humboldt County roads provide the primary access from U.S. 101 to the King Range, and a combination of County and BLM roads provide access within the KRNCA. The rough terrain, highly erosive soils, frequent seismic activity, and high rainfall combine to create challenges for both use and maintenance of the road system.

3.14.2 Specific Mandates and Authority – Regulatory Framework for Travel Management

Vehicle use in the KRNCA is managed under the following direction and authority: 43 CFR Part 8340 Off-Road Vehicles, Subpart 8342, Designation of Roads and Trails.

All BLM lands in the planning area are designated through the land use planning process as open, limited, or closed to vehicle travel under the BLM Off-Highway Vehicle (OHV) Regulations. Under this system, in an "Open Area" all vehicle types are allowed to access all parts of an area (including cross-country travel) at all times. In a "Limited Area" vehicle use is allowed only during certain times of year, by certain types of vehicles, and/or in certain parts of the area such as designated roads and trails. Vehicle use is not allowed in closed areas. The OHV regulations apply to use of routes by the general public. Certain other routes may be open to private inholders, grazing or other permittees to meet specific access needs or legal rights.

Existing OHV designations are outlined in the "No Action" alternative of the Draft RMP (see Chapter 3). Current vehicle management is based on the 1986 *King Range Transportation Plan and Supplement*. This plan addressed a variety of concerns related to vehicle use, roadways, and resource protection, and provided guidelines for future road improvements, maintenance activities, and management decisions. The 1986 Transportation Plan identified several management objectives:

- Objective 1—Obtain or assure public rights for recreation use of all suitable lands in the King Range.
- Objective 2—Provide safe and orderly recreation use.
- Objective 3—Enhance and maintain the natural character of the landscape on the west slope and lands adjacent to recreation roads and trails on the east slope.
- Objective 4—Eliminate adverse physical and biological impacts of OHVs on vegetation, soil, wildlife, and cultural resources.
- Objective 5—Minimize conflicts among non-OHV recreationists and OHV users.

Previous vehicle management decisions were published in a 1979 *Federal Register* Notice (non-motorized use only from Mattole Beach to Lighthouse); and additional vehicle management decisions include the 1990 California Statewide Wilderness Study Report (closure of coastal slope portion of the Smith-Etter Road) and the 1998 Black Sands Beach Plan Amendment (closure of 3.5 mile beach open riding area).

County roads within the KRNCA are public routes and are managed by Humboldt County, except for a short stretch of Chemise Mountain Road at the southern tip of the NCA which is under Mendocino County jurisdiction.

3.14.3 Existing Conditions—Transportation System

Figure 3-17 identifies the County and BLM managed roads that provide access to and within the KRNCA. The primary access route for visitors to the King Range from the south is via Garberville/Redway exit off U.S. 101, following the Briceland-Thorn Road and Shelter Cove Road to the coast. The KRNCA Office is seventeen miles west of Redway along this paved two-lane route, and the

town of Shelter Cove is nine miles farther. The primary northern access route is from Ferndale via the Mattole or Wildcat Road, reaching the Mattole Campground 35 miles south of Ferndale. A third corridor accesses the central part of the KRNCA from the Eel River Valley at the South-Fork/Honeydew exit of U.S. 101. Known as Bull Creek or Panther Gap Road, this route winds for 26 miles through redwood forests and open ridgetops to the Honeydew Creek Campground. All of these access corridors traverse dramatic mountain landscapes and are highlighted as scenic driving destinations in travel guides for the region.

From where Mattole Road intersects with Bull Creek Road at Honeydew, Wilder Ridge Road runs south near the eastern edge of the King Range to link up with Shelter Cove Road about three miles east of the KRNCA administrative office. This road is the main north-south link between area trailheads and recreation sites. Although the route is mostly paved, it has numerous one lane stretches and a steep winding descent into Honeydew that limits north-south access by visitors with trailers or larger recreation vehicles. The King Peak Road parallels Wilder Ridge Road to the west, and traverses the KRNCA. This route is unpaved and mostly one lane, and provides access to several camping areas, trailheads, and BLM roads. North of the Horse Mountain Campground, this route becomes extremely narrow, steep and winding, and is inaccessible to even small trailers or recreational vehicles. Chemise Mountain Road traverses the Bear Creek Valley south from Shelter Cove Road and provides access to Wailaki and Nadelos Campgrounds. A number of County roads in Shelter Cove also serve as access routes to BLM recreation sites within the subdivision.

Humboldt County roads serve as scenic access corridors to the KRNCA.

The *Regional Transportation Plan for Humboldt County* is the primary strategic planning document for the area's County roads. This plan also identifies priorities for funding of roadway improvements with federal and state highway funds. Table 3-20 lists the estimated traffic volumes and functional classifications of the primary County access roads to and within the KRNCA. The plan recognizes the importance of the tourism industry to the County economy and the use of transportation routes as recreation travel corridors. It identifies needs for improving access corridors, providing adequate parking for recreational vehicles, and coordinated signing as priority needs for the County.

Table 3-20: Estimated Traffic Volumes

ROAD NAME	ESTIMATED TRAFFIC VOLUME	FUNCTIONAL CLASSIFICATION
Mattole Road	900 Vehicles Per Day	Major Collector
Bull Creek/Panther Gap Road	800 Vehicles Per Day	Major Collector
Wilder Ridge Road	140 Vehicles Per Day	Major Collector
Shelter Cove Road	800 Vehicles Per Day	Major Collector
Chemise Mountain Road	Unknown	Major Collector
King Peak Road	Unknown	Minor Collector
Lighthouse Road	Unknown	Minor Collector

Source: Humboldt County Regional Transportation Plan, 2000-2002

The BLM maintains a 44-mile network of unpaved roads that links the County road system to KRNCA trailheads and other recreation sites and provide for fire and administrative access. Many of the routes also provide access to private lands, with Nooning Creek, Prosper Ridge, and Windy Point Roads serving as primary access for year-round residents. Below are listed the BLM roads in the KRNCA that are maintained for public access and their approximate mileage. No traffic volume data exists for these routes.

- Prosper Ridge Road, 2.2 miles
- Nooning Creek Road, 2.0 miles
- King Range Road, 6.6 miles
- Finley Ridge, 1.5 miles
- Smith-Etter Road, 10.2 miles
- Windy Point Road, 1.6 miles
- Telegraph Ridge Road, 3.2 miles
- Etter Road, 1.9 miles
- Paradise Ridge Road, 9.0 miles
- Saddle Mountain. Road, 5.4 miles

A variety of issues affect road use and maintenance on routes to and within the KRNCA. Some of the major issues are as follows:

- Erosive soils, steep topography and heavy precipitation events combine to make roads extremely susceptible to erosion and failure from landslides. Sedimentation from abandoned logging roads and improperly maintained roads impacts anadromous fish spawning success and other aspects of watershed health.
- Winter storms often make area roads temporarily impassible due to landslides, fallen trees, heavy snow in the higher elevations and muddy/soft surfaces.

- Visitors with large motorhomes and travel/boat trailers often have improper braking/towing capacity for the steep grades in the area. As a result, brake failures and vehicle fires from overheated brakes are safety issues.
- Slow moving vehicles cause numerous traffic slowdowns on area roads, where the steep terrain limits available pullouts.
- Parking capacity is often exceeded at popular sites during peak summer weekends, especially at Black Sands Beach in Shelter Cove.

A variety of actions have been taken to minimize impacts from the above issues, including improved visitor information, corrective road maintenance, and vigilant inspections/maintenance during winter storm events. Also, several BLM managed roads are limited to four-wheel drive vehicle use only, and/or are also closed in winter for visitor safety and to prevent road damage from wet weather travel.

3.14.4 Off-Highway Vehicles (OHVs)

A BLM-maintained 44-mile road network provides for OHV opportunities in the KRNCA. This road network ranges from two-wheel drive accessible routes to four-wheel drive "two-track" roads. Several of these routes serve as scenic driving corridors into some of the most remote reaches of the Lost Coast. They offer access to trails, scenic vistas, hunting opportunities, and undeveloped camping.

Motorized use of the King Range coastline by OHVs has been a controversial management issue since the KRNCA was established. In addition to OHV enthusiasts, other recreation users (particularly surfers and abalone divers) have used vehicles to reach more remote areas along the coastal corridor. In contrast, backcountry users, whose numbers have increased dramatically since the 1974 Management Program was written, feel their experience is diminished by the presence of vehicles on the coast (BLM 2003b).

Initially the 1974 Management Program allowed OHV use on a three-mile stretch of beach in the north section of the King Range, but use was discontinued in 1979, under authority from the California State Lands Commission, due to damage to archeological sites. In 1986, the KRNCA Transportation Plan allowed continued OHV use of the beach between Telegraph and Gitchell Creeks, citing popularity of the riding area and minimal resource impacts. However, it proved difficult to prevent vehicles from traveling north of Gitchell Creek onto the closed portion of the beach, and generally OHV use conflicted with primitive recreation and wilderness values (BLM 1997b). The 1986 Transportation Plan called for increased on-the-ground BLM presence to enforce the beach closure at Gitchell Creek, increased public information and signage, and monitoring to determine effectiveness of the plan, but these efforts met with minimal success. Nearly ten years later the BLM revisited the issue in the 1997 Environmental Assessment and Plan Amendment, which closed the remaining 3.5 mile stretch of Black Sands Beach to OHVs.

3.14.5 Current Management Practices

BLM maintains the 44-mile network of roads identified for public use in the KRNCA Transportation Plan. These roads are maintained on an as-needed basis through road grading and drainage work such as culvert maintenance or improvements. Grading and major improvements are completed through

contracts with the BLM performing other routine maintenance. The BLM also provides directional and other signs on these routes.

Maintenance and reconstruction of the road network to minimize erosion/sedimentation of area watersheds is an ongoing management priority. Current efforts are focused on outsloping and removing berms from the road network to improve road drainage and reduce the need for inboard ditches and culverts. Clogged culverts are a major source of road failures during heavy rains.

Several cooperative projects have been initiated to upgrade road surfaces and drainage structures on county roads in the KRNCA. Cooperative agreements established with the Humboldt County Department of Public Works and the BLM allow for joint projects on County roads within the KRNCA. Projects to date include the paving of 2.6 miles of Chemise Mountain Road (adjacent to the South Fork of Bear Creek, a prime salmon spawning stream) in 1996-97 (in cooperation with USFWS grant), and the replacement of culverts and other drainage structures on King Peak Road (1998). Humboldt and Mendocino County road departments regularly perform routine maintenance on all county roads in the planning area.

3.15 RECREATION RESOURCES

3.15.1 Introduction

The KRNCA is best known to outdoor enthusiasts as the location of the Lost Coast Trail, an oceanfront backpacking route that is regularly featured in magazines and travel guides. However, the area offers opportunities for a diverse array of activities including camping, hiking, equestrian use, hunting, fishing, surfing, mountain biking, wildlife watching, photography, and driving for pleasure, among others. The public lands in the King Range were accessed for dispersed recreation opportunities well before its designation as a National Conservation Area in 1970. However, the lack of facilities and public access limited use. The first recreation facilities were constructed in the 1960s and included the King Crest, Chemise Mountain and Lightning Trails, and the Wailaki, Nadelos, Horse Mountain, and Tolkan Campgrounds. Additional trails and facilities have been constructed as public demands have increased and changed. However, the area continues to retain its rustic character as a place for more adventurous outdoor enthusiasts.

This diversity of recreation resources leads to a wide array of often-overlapping uses. For example, at Mal Coombs Park in Shelter Cove, a wedding party may gather in the same parking area as several abalone fishermen preparing to dive, while tidepoolers and beachcombers get out of their cars and head for the shoreline. Backpackers walk to the Lost Coast trailhead at Black Sands Beach alongside elderly couples preparing for a quiet picnic. At Mattole Beach, local school children learn about the area's ecology or native cultures while vacationers from across the country set up their tents adjacent to the wild coastline. The area must be many things to many people, even while retaining its distinctive primitive character.

The King Range is a nationally-designated conservation area, but also a local resource for surrounding communities, particularly Shelter Cove and Petrolia where public lands provide community greenspace

for picnics, birthdays, weddings, and other social gatherings. Shelter Cove is also the main coastal access areas for residents of southern Humboldt County, including Briceland, Redway, and Garberville.

3.15.1.1 Regional Perspective

The King Range offers recreation opportunities unique to the region and the entire West Coast, particularly the coastal backcountry experience available on the Lost Coast Trail. For the purposes of this discussion, the recreation region can be defined as the general area along the coast from the Oregon border south to Mendocino, plus a wide inland arc reaching the Mendocino National Forest in the south and the Shasta-Trinity and Six Rivers National Forests in the north (see Figure 3-18). This area contains numerous state parks as well as national forests, parks, and recreation areas.

With the exception of adjoining Sinkyone Wilderness State Park and a small section of Prairie Creek Redwoods State Park, all of the region's coastal recreation opportunities at major recreation sites are oriented towards front country (developed, easily accessed) use, mainly beach access and camping, with no backcountry or primitive opportunities. There are several inland wilderness areas where backpacking is a common activity, such as the Yolla Bolly Middle Eel Wilderness and the Trinity Alps, but these offer much different settings and experiences. Other inland sites focus on more developed recreation; for example, the Ruth Lake area is geared towards lake-oriented recreation such as shoreline camping and watercraft use and Benbow Lake State Recreation Area is suited to non-motorized watercraft, swimming, and picnicking.

The King Range is unique as a place where visitors can take an extended, backcountry camping trip in a coastal setting. Combined with Sinkyone Wilderness State Park, the trail system on the Lost Coast is the largest coastal backcountry trail network in the nation. Although the U.S. has numerous sizable areas of mountain and desert ecosystems that offer backcountry recreation opportunities, primitive coastal settings are extremely limited. In addition to the King Range/Sinkyone coast, only a handful of areas are sizable enough to offer a coastal wilderness experience; the only comparable area on the west coast is Olympic National Park. Point Reyes National Seashore and Prairie Creek Redwoods State Park offer some backcountry opportunities, but on a smaller scale.

3.15.2 Applicable Regulatory Framework

BLM manages recreation in the KRNCA using the following regulations and policies.

3.15.2.1 Fire Permits

Campfire permits are required for anyone who builds or maintains a campfire that is outside developed campgrounds, as well as for the operation of all cooking stoves or other open flame. During high fire seasons, campfires may be temporarily suspended until the conditions change. Campfire permits may be obtained free of charge from any BLM, USFS, or CDF offices (BLM website 2003).

3.15.2.2 OHV Designations

See Section 3.14.

3.15.2.3 Rehabilitation Act and Americans with Disabilities Act

BLM facilities are covered under Section 504 of the Rehabilitation Act of 1978 (Public Law 93-112), which requires that "programs and facilities be, to the highest degree feasible, readily accessible to and usable by all persons who have a disability, including mobility, visual, hearing, or mental impairments."

3.15.2.4 Hunting and Fishing

BLM manages the KRNCA in a manner consistent with California Department of Fish and Game (CDFG) regulations for all applicable fish and game species found in the area. The King Range falls within the CDFG's Zone B4, which sets the season dates for specific species. The deer rifle season (by far the most popular) begins the fourth Saturday in August and extends for 37 consecutive days. Squirrel season opens the second Saturday in September and ends the last Sunday in January. Bear season opens the same day as the deer rifle season and extends until the last Sunday in December or when 1,500 bear are taken statewide, whichever comes first. BLM also assists CDFG in the management of marine life such as abalone and tidepool organisms that are available for permitted collecting. Coastal waters off-shore from Mattole beach to the Punta Gorda Lighthouse were designated a Marine Resources Protection Act Ecological Reserve in 1994, and the entire coastline from Punta Gorda south to Point No Pass (39° 57') was also designated an Area of Special Biological Significance by the California State Water Resources Control Board in 1974.

3.15.2.5 Special Recreation Permits

BLM policy (FLPMA and Title 43 CFR 8372 – Special Recreation Permits, Other than on Developed Recreation Sites) and the 1992 King Range Visitor Services Plan require that commercial and organized non-commercial groups obtain Special Recreation Permits prior to utilizing the KRNCA for their activities. All groups charging fees, including outfitters, must obtain a commercial use permit and meet associated fee and insurance requirements. Noncommercial use permits are required for non-commercial or educational groups using the backcountry for overnight use, but no fee is charged and insurance is not required. Non-organized groups, individual or family use does not require a Special Recreation permit. Groups are considered "non-organized" when no formal advertising of the trip occurs, no fees are charged, and the group is not affiliated with any established organization.

Special Recreation Permits are required for several reasons. Commercial recreation fees are collected to ensure a fair return to the public for private financial gain from use of public land. Backcountry group permits, both commercial and non-commercial, provide the opportunity to stress "leave no trace" backcountry ethics, and dispense other information. In addition, routing permitted groups to certain campsites during high use times can help spread use out and reduce social and environmental impacts on smaller more fragile sites.

3.15.2.6 Recreation Fees

Current programs relating to recreation fees on all Federal lands were authorized under the Land and Water Conservation Fund Act of 1965. In 1996 the BLM, U.S. Forest Service, National Park Service, and Fish and Wildlife Service were authorized and encouraged by Congress to implement a Recreational Fee Demonstration Program. Under the program, all recreation fees are retained by the office collecting

the fees for reinvestment into the area where they were collected to improve ground management services and facilities. The Recreational Fee Demonstration Program will continue until September 30, 2005, at which time it may or may not be extended. Fees are currently charged for commercial Special Recreation Use permits, bear-canister rentals for overnight backcountry travel, and campground use (BLM 2003b). Surveys conducted in the King Range in 1991, 1997, and 2003 indicate that a high percentage of visitors would be willing to pay a fee for use of the KRNCA. The 1997 and 2003 studies specifically asked backcountry users their willingness to pay to access the trail system: 83 percent and 81 percent, respectively, indicated a willingness to pay, with the median amount of $5.00 per day indicated for both studies. The main reason given by those opposed to paying was that they already paid for area management through taxes.

3.15.2.7 Bear Canisters

As use has increased on the coast, so have encounters with black bears, likely drawn to popular camping areas by improperly stored food and/or refuse. BLM implemented an emergency rule in 2002 to reduce conflicts between visitors and bears, requiring visitors to use a hard-sided bear-proof food storage container (manufactured specifically for this purpose) for storing food, trash, toiletries, and other scented items. To date this effort appears to be having a positive effect, as damage to backpacking equipment, food supplies, and reported encounters with bears have decreased since the rule went into effect.

3.15.2.8 Camping Stay Limit

The BLM limits camping stays to fourteen nights per year on all agency administered lands in northwest California.

3.15.2.9 Law Enforcement

BLM has one fully commissioned law enforcement ranger who patrols the King Range National Conservation Area. An additional three law enforcement rangers work out of the Arcata field office and occasionally patrol the King Range as well, particularly during holidays, busy weekends, or during "events" in the area. BLM also has a non-law enforcement Backcountry Ranger on staff that patrols the Backcountry on foot to provide public contact for visitors and to conduct resource monitoring in support of management objectives.

3.15.2.10 Resource Monitoring

A resource monitoring program was developed in 2002 to assess resource impacts from backcountry use along the Lost Coast. The monitoring program assesses all campsites and surrounding trails and auxiliary use areas during both early spring and mid-autumn. The reason for monitoring twice a year is to assess conditions after the winter storms have altered the beach environment , often removing campsites and driftwood shelters along the beach, and then to evaluate the change in conditions after the heavy use season in summer. Monitoring assesses impacts such as littering, fire ring proliferation, condition of driftwood shelters, sanitation problems, and vegetation and soil disturbance for all sites between Mattole and Black Sands Beach. Information from this monitoring program will be used in combination with visitor surveys and visitor use counts, reports from employees in the field and other information to determine the need for a more comprehensive visitor use allocation system in the future.

3.15.3 Existing Conditions

3.15.3.1 Recreation Sites and Opportunities

Recreation has long been a part of the King Range landscape, perhaps starting with early hunting lodges built in the 1920s and '30s (see Section 3.4.3.2, Historic Sites). As early as 1964, before the KRNCA was formally established, there were already four developed campgrounds and three "hunter camps" (described below) on public-owned lands. Currently, BLM manages approximately eighty miles of trails, six developed campgrounds, four upland backcountry campsites, five coastal access areas, a Visitor Center, and other visitor and recreation features and destinations.

Hiking Trails and Trailheads

The King Range contains approximately eighty miles of hiking trails spanning from the coast to the tallest ridges and mountain peaks (see Figure 3-19). The majority of these trails were developed between 1964 and 1970, but since 1970 many have been expanded, developed, or even re-routed. There have been several recent trail installations since 1999, including Cooskie Spur Trail, Rattlesnake Ridge Trail, Horse Mountain Creek Trail, and the Chinquapin Trail. Two trails, the King Crest Trail and Lost Coast Trail, have been designated as National Recreation Trails. This designation identifies these routes as being in the "hall of fame" of U.S. trails.

The Lost Coast Trail is the most popular destination in the KRNCA.

Established trailheads include the following: Black Sands Beach, Mattole Beach, Northslide Peak, Kinsey Ridge, Spanish Ridge, Lightning, Saddle Mountain, Horse Mountain Creek, Hidden Valley, Nadelos and Wailaki Campgrounds, and Windy Point. Major trails in the King Range include:

- **Buck Creek Trail:** This 3+ mile long trail drops nearly 3,300 vertical feet from the King Crest Trail (one mile from Saddle Mountain Trailhead) to the beach.

- **Kinsey Ridge Trail:** This old road, gated at the Kinsey Ridge trailhead along the Smith-Etter Road, drops 2,450 feet over four miles from the trailhead to the beach.
- **Spanish Ridge Trail:** This trail follows an unmaintained dirt road for about two miles from the Spanish Ridge Trailhead (end of Telegraph Ridge Road) before splitting off from the Cooskie Creek Trail and plunging down a decommissioned road 2,400 vertical feet over three miles to the ocean.
- **Rattlesnake Ridge Trail:** This five mile long trail drops 3,500 vertical feet from the King Crest near the Miller Loop Trail to Big Flat.
- **Cooskie Creek Trail and Spur:** This 13 mile trail generally follows old ranch roads from the Spanish Ridge Trailhead to the beach between Fourmile Creek and the Punta Gorda Lighthouse. The Cooskie Creek Spur is a shortcut to the beach, dropping 750 vertical feet in 1.2 miles along an old ranch road.
- **Lost Coast Trail, north section:** This main portion of the Lost Coast Trail is the "heart" of the KRNCA. It extends 25 miles along the beach from Mattole Campground/Trailhead to the Black Sands Beach trailhead at the north end of Shelter Cove.
- **Lost Coast Trail, south section:** The BLM portion extends for a little over five miles from Hidden Valley Trailhead, rising 900 feet vertical elevation to Chemise Mountain before winding down into the Sinkyone Wilderness State Park.
- **Lightning Trail:** This 2 mile trail begins at the Lightning Trailhead at the end of the King Range Road and rises 1,800 vertical feet to King Peak, passing Maple Camp (with water) along the way.
- **Horse Mountain Creek Trail:** This connector trail from the beach to the ridge, drops 1,500 feet from the Horse Mountain Creek Trailhead along the King Peak Road to the beach in 3.8 miles.
- **Chemise Mountain Trail:** This connector trail is less than one mile long and links both Nadelos and Wailaki campgrounds with the southern Chemise Mountain portion of the Lost Coast Trail. It rises about 700 feet.
- **King Crest Trail:** This 11 mile trail traverses the King Crest, the "spine" of the King Range.

Additional, shorter trails in the King Range include the Chinquapin Trail, Miller Loop, Maple loop, and the nature trail between Nadelos and Wailaki campgrounds. Miller Loop and Maple Loop Trails connect Miller and Maple Camps (each near water sources) with the King Crest Trail. The Chinquapin Trail provides access to the Chinquapin Camp.

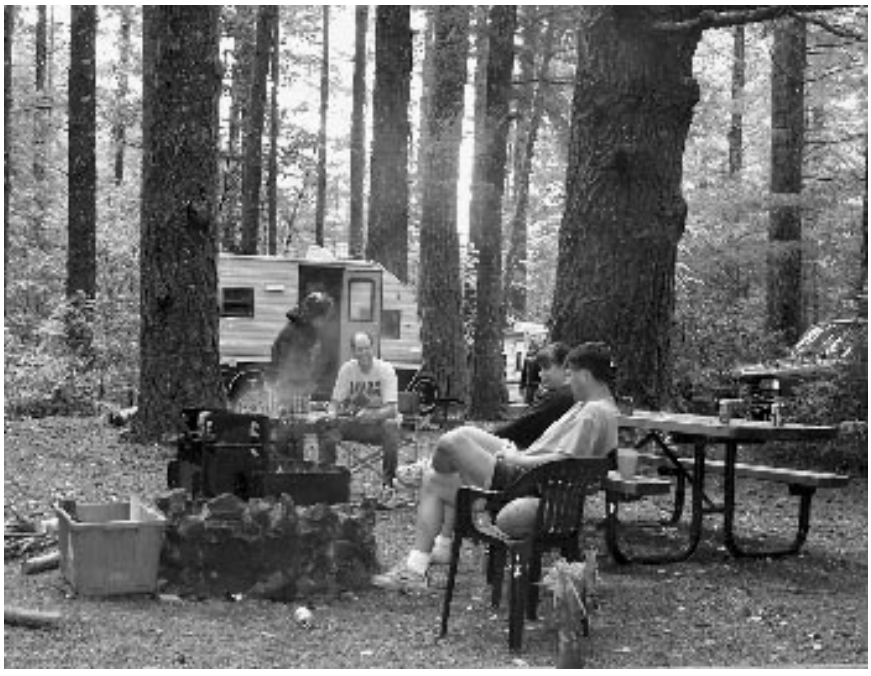
The Lost Coast Trail is particularly distinctive as one of the longest stretches of backcountry coastal trail remaining in the western United States. Only Olympic National Park in Washington has a similarly long stretch of backcountry coastline. The Lost Coast Trail follows approximately 56 miles of coastline; the King Range segment is 37 miles long, and the trail then continues south for another 19 miles through the Sinkyone Wilderness State Park.

Camping/Campgrounds

There are six developed campgrounds in the King Range, with a total of 54 sites, varying in terms of site layout, screening, proximity to residential areas and roads, and water availability (see Figure 3-18). They are listed here from north to south:

- **Mattole Campground:** Includes 14 tent/trailer campsites with picnic tables, fire rings, and vault toilets, and is the only beach campground in the King Range.
- **Honeydew Creek Campground:** 5 tent/trailer campsites in a riparian setting, with picnic tables, fire rings, and vault toilets. No potable water is available.
- **Horse Mountain Campground:** Offers 9 tent/trailer campsites with picnic tables, fire rings, and pit toilets. No water is available.
- **Tolkan Campground:** 5 trailer/4 tent campsites with picnic tables, fire rings, and vault toilets.
- **Nadelos Campground:** "walk-in" campground with 8 tent campsites, picnic tables, fire rings, potable water, and vault toilets. Entire campground may be reserved for overnight group use (up to 60 people).
- **Wailaki Campground:** 13 tent/trailer campsites with picnic tables, fire rings, potable water, and vault toilets.

In addition to the BLM-managed campgrounds, A. W. Way Park, operated by Humboldt County, offers camping and picnic sites along the Mattole River between Honeydew and Petrolia. Visitors wishing more amenities (hookups, showers) can camp in privately operated campgrounds in Shelter Cove, Redway, Garberville or Ferndale.



The heavily forested Wailaki Campground is one of the most popular in the KRNCA.

Additionally there are four primitive backcountry camps in the King Range, some that have been established and used for many years, stemming from early "hunter camps." Maple Camp, Bear Hollow Camp, and Miller Camp are located on upland trails near King Peak, with water (although it must be filtered or purified) available from streams or developed springs that flow all or most of the year. Chinquapin Camp is the only established backcountry campsite on Chemise Mountain and is near a perennial stream. All of these backcountry campsites are small, shaded woodland sites, and historically have received light, sporadic use. However, with increasing visitation and organized groups being re-routed to alternative trailheads (other than Black Sands Beach and Mattole), use of these campsites is increasing.

Day Use Areas

The BLM maintains three day-use areas in the community of Shelter Cove. Mal Coombs Park lies in the heart of Shelter Cove, and includes the newly relocated Cape Mendocino Lighthouse (see description below). A stairwell perched on the rocky cliffs of Mal Coombs Park allows access to frequently visited tidepools and sea lion resting areas. BLM maintains a restroom, an information kiosk, interpretive panels, and a picnic area with barbeque facilities at Mal Coombs Park. In addition, Seal Rock and Abalone Point day-use areas have pull-outs off Lower Pacific Drive that offer sightseers a place to picnic with unobstructed views of the ocean. Other than picnic tables and interpretive panels, Seal Rock and Abalone Point day-use areas are undeveloped. Mal Coombs Park has become a popular location for special events such as weddings, memorials, non-profit fundraisers, etc., that require a permit. The BLM processes each request through the Special Recreation Permit process.

Black Sands Beach, known for its distinctive geological composition of greywacke stone, is located just to the north of Shelter Cove, and is a popular day-use area among both visitors and local residents. To keep up with visitor demand, a recently constructed parking lot with restrooms, kiosk, overlooks with interpretive displays, and drinking water resides on a bluff overlooking Black Sands Beach. An emergency telephone with 911 access is located at a smaller universal access parking lot closer to the beach. Black Sands Beach is the most heavily used trailhead to access the King Range portion of the Lost Coast Trail. This causes crowding problems on popular summer weekends when the parking area is filled beyond capacity.

The mouth of the Mattole River is also heavily used for easy beach access by visitors and local residents. The Mattole Beach trailhead is the northern terminus of the Lost Coast Trail and the primary access route for day hikes to Punta Gorda Lighthouse.

King Range Office/Visitor Center

The King Range Visitor Center, located on Shelter Cove Road near Whitethorn Junction, was completed in 1999 and serves as the key resource for KRNCA public information and regional land stewardship meetings. Visitors can ask BLM staff questions about recreation facilities and uses, pick up maps and tide charts, obtain fire permits, rent bear canisters, and enjoy a variety of photographic, educational, and interpretive displays. The facility also serves as the administrative office for the King Range staff.

Lighthouses

The historic Punta Gorda Lighthouse is located about three miles south of the Mattole Campground/Trailhead on the Lost Coast Trail. Historically, high winds and dangerous shoals caused many shipwrecks in this area, promoting the construction of the lighthouse in 1911. Light-keepers generally did not look forward to duty at isolated and lonely Punta Gorda, which earned the reputation of being the "Alcatraz" of lighthouses. No electric lines ever connected it to the outside world, and fierce winds and flooded streams kept it cut off from civilization for much of the winter. Punta Gorda was decomissioned in 1950. The site is a popular destination for day hikers.

The Cape Mendocino Lighthouse was carved into the Cape 400 feet above the surf in 1868. The conditions for the light-keepers here were brutal. Near constant gales and frequent earthquakes literally shook their homes apart. The Lighthouse was decommissioned in 1950. By 1999, when it was in danger of slipping from its original location into the ocean, the Cape Mendocino Lighthouse Preservation Society worked with the BLM and Humboldt County to restore and relocate it to Mal Coombs Park in Shelter Cove. The original lens from the lighthouse is displayed at the county fairgrounds in nearby Ferndale. Today, Society volunteers open the Lighthouse and provide information to visitors during heavy use periods. Interpretive displays both outside and inside the facility tell the story of this interesting and historic lighthouse.

3.15.3.2 Recreation Activities

Sightseeing

Many people visit the KRNCA area as part of or major destination point for sightseeing trips. Shelter Cove is a frequent destination for people wanting to fish, gain spectacular ocean views, picnic by the sea, or drive for pleasure and enjoy the surrounding scenery, to name a few reasons. Those wishing to see more of the King Range while sightseeing can also drive roads such as the King Peak, King Range, Saddle Mountain, Smith Etter and Telegraph Ridge Roads. People also visit the King Range specifically to simply watch the waves, particularly in the winter when the surf is especially large and spectacular after storms.

Wildlife Viewing and Photography

The King Range has a diversity of wildlife, both terrestrial and marine. Points within the King Range are often used for observing and photographing whales as they migrate past the area during late fall and early spring. Seals and sea lions can easily be seen at a number of locations, particularly from Shelter Cove sites, the Punta Gorda Lighthouse area, and Sea Lion Gulch. Exploring intertidal life is a popular activity, particularly below Mal Coombs Park at Shelter Cove, and the Punta Gorda Lighthouse area. Elk viewing in the Hidden Valley area is also very popular.

Backpacking and Hiking

The primary recreational attraction to the KRNCA is the backpacking, hiking , and camping opportunities in the backcountry, particularly along the Lost Coast Trail. The classic "through" hike is the 25 mile stretch between Mattole Beach to Black Sands Beach, usually done north to south in the summer due to the prevailing, often strong, north winds. Approximately two thirds of the Lost Coast

trek involves hiking directly on the beach, on sand, gravel, and cobbles, which can slow the pace of even the strongest hiker. The remaining third of the trail, mainly in the Big Flat and Spanish Flat areas, traverse uplifted benches above the ocean and provide much easier walking. Creeks and springs are plentiful along the coast but all water must be filtered. During the rainy season (generally November through April), winter storms can cause major obstacles to backpackers. Heavy rains swell the major creeks, making them impassable while large waves make the beaches dangerous. Two major areas along the coast (from just south of Buck Creek to Miller Flat, and between Sea Lion Gulch and Randall Creek]) can be difficult to pass at higher tides and extremely dangerous during times of rough seas with large swells. Other natural hazards include poison oak, ticks, and rattlesnakes are found close to the beach as well as along the upland trails.

Despite the sometimes adverse conditions, the Lost Coast provides the backcountry traveler a myriad of wondrous sights and sounds. Tidepools, archaeological and historic sites, diverse and abundant wildlife, wildflowers, and the ever present ocean produce unique experiences for visitors. While the King Range NCA receives visitors from throughout the country and world, the majority of backcountry users come from the greater San Francisco Bay area (Martin and Widner 1997). Many hear about it from word of mouth or travel articles. Others read articles from magazines such as Outside, National Geographic, Backpacker, Sunset, and others which frequently write about the Lost Coast.

Backcountry campers may camp anywhere within the King Range. Numerous campsites have become established through frequent use along the coast, particularly at the mouths of the major creeks. Along the upland trails, most people camp at the established backcountry campsites (Maple Camp, Miller Camp, Bear Hollow, and Chinquapin Camp) as these locations essentially provide the only sources of drinking water. While the majority of backcountry overnight users are drawn to the Lost Coast, an increasing number of people are backpacking the sixty miles of upland trails. Completion of the Rattlesnake Ridge Trail greatly expanded the loop trail opportunities combining upland trail and beach backpacking. The Buck Creek-King Crest-Rattlesnake Ridge-Lost Coast Trail loop trip is becoming more popular while fewer people connect the upland trails with the beach via other connector trails such as the Kinsey Ridge trail. These upland/beach loop trail opportunities give people more diversity in their backpacking outing but require extensive elevation gains and losses and demand that the hiker be in excellent physical condition.

Equestrian Use

Horseback riding as a recreation activity in the King Range has a relatively long history, predominantly with local equestrian enthusiasts. Present equestrian use is light, with most activity focused along the Lost Coast Trail. It is not uncommon for llama and goat packers to use the area as well as the more traditional horse and mule packers. BLM has worked to address equestrian demand including recently developing the Horse Mountain Creek Trail and staging area, with help from equestrian organizations. Horse use is partly limited due to difficulty in accessing trailheads on narrow mountain roads with large trailers. Many trails also have narrow stretches that are difficult for pack stock to negotiate. Opportunities exist to improve equestrian access on a portion of the trails.

Mountain Biking

When the 1974 Management Program was developed, mountain bicycles had not yet been invented, but in the past ten to fifteen years their use has sky-rocketed nationwide. To date, the King Range has received relatively little use, most likely due to the extremely steep and rugged nature of the area. Large portions of the King Range are managed as Wilderness Study Areas (WSAs), including the entire trail system. Under the BLM's *Interim Management Policy for Lands Under Wilderness Review* (IMP), only routes within WSAs originally inventoried as vehicle "ways" are open to mountain biking. Ways inventoried in the King Range WSA are now managed as non-motorized trails and are open to mountain biking; major routes include the Buck Creek, Kinsey Ridge, Spanish Ridge, and Cooskie Creek Trails. Additional routes open to mountain bikes include the 40-mile unpaved BLM road network. Detailed use estimates are not available for mountain biking in the King Range, but site observations by field personnel indicate very low use on the trail system (less than 100 visitor days annually), and slightly higher use on the road system (less than 500 visitor days annually).

The BLM developed a National Mountain Bicycling policy in 1992 (updated in 2002). This policy recognizes mountain bicycling as an appropriate use of public lands, and encourages identification and development of a diversity of riding opportunities on public lands. Opportunities exist to develop single-track mountain bike trails in non-WSA parts of the King Range, and one route is currently under construction following the rehabilitated Queen Peak Mine Road.

Hunting

Several types of animals, including deer and squirrels, are hunted in the King Range, especially the northern part of the area. Similar to national trends, the number of licensed hunters has decreased in California (based on license sale data from 1996 to 2002). However, not all types of hunting permits have decreased in sales; non-resident deer tags, duck stamps, and two-day waterfowl permits have all increased (CDFG 2002). Informal field observations indicate that hunting trends in the King Range are decreasing as well. However, the area continues to be popular among hunters, especially since it is the largest block of public land available for hunting in the region. Opening day of deer rifle season in the King Range brings in a moderate influx of hunters into a comparatively small region, resulting in some user conflicts. Most conflicts arise between hunters and private landowners bordering the KRNCA. The landowners cite trespass and safety as major concerns. The BLM has worked to minimize these conflicts by increasing hunter information and providing additional field staff and ranger patrols in popular hunting areas.

Surfing

The wave breaks off the King Range, particularly in the area around Big Flat (8.5 mi. north of Black Sands Beach), are well known for excellent surfing conditions. The best conditions occur from fall until spring when winter storms build large ocean swells. Many surfers hike the 8.5 miles from Black Sands Beach to Big Flat. However, in recent years, increasing numbers of drive-in boaters make trips from Shelter Cover to access backcountry surf destinations, particularly Big Flat. Many of these boats are used for day trips and are anchored off shore while their owners surf. However, increasing numbers of surfers are landing boats and bringing in supplies for camping. This trend has raised the question about the appropriateness of using motorized watercraft in an otherwise non-motorized backcountry setting. A

trend of increased littering may be a result as some visitors that arrive by boat are unwilling or unable to pack out the larger amount of supplies brought in during the winter surf season.

Fishing

The community of Shelter Cove is a major sport-fishing destination in California, featuring a public boat launch ramp, commercial chartering services, a parking area for car/trailer combinations, and a fish cleaning station. Anglers are drawn to the area for the summer ocean salmon season, but also fish for halibut, albacore and bottom fish. Some fishermen park at Mal Coombs Park which was designed for pull-through boat trailer parking. However, with the increased use of the park for other activities, the lot is often congested during peak summer weekends. The BLM has a design in place to expand parking, but funding has been unavailable for construction. Fresh water fishing is closed in the King Range except in to the lower Mattole River below Honeydew Creek which is open to catch and release steelhead fishing. The remaining streams are closed to fishing to protect threatened salmon and steelhead populations.

Other Uses of the Area

While most recreational activities in the King Range focus on hiking, backpacking, camping, wildlife viewing, surfing, hunting, fishing, and sightseeing in general, new interests and evolving technologies also bring less traditional uses to the area. Geocaching, a technology-based treasure hunt, is becoming more popular, with at least one geocache site established in the King Range. Mattole Beach is occasionally used for paragliding. These and other activities receive very light use and tend to have little to no impact on the area.

3.15.3.3 Recreation Use Levels and Demand Analysis

Demand for specific recreation activities available in the King Range has, in most cases, increased significantly since the area was first established. Primitive camping, including backpacking, has rapidly increased in popularity over the past several decades. The area has also received some mountain biking use, although levels have been low due to the steep topography of area trails. And, as mentioned above, there are several new types of recreation activities occurring in the King Range, including paragliding and geocaching.

At a local level, BLM compiles visitor use information from observation sheets, trailhead registers, visitor feedback at the visitor center and direct contact in the field, bear canister rental information, Special Recreation Permit information, and will rely heavily on the 2003 Lost Coast Trail Backcountry Visitor Study. Preferences and use levels of visitors have been estimated, using the best available information and professional knowledge.

The 1997 Lost Coast Trail Backcountry Visitor Study (Martin and Widner 1998) was designed to gauge visitor demographics, likes and dislikes, and to establish trends in visitor satisfaction with the King Range, specifically the Lost Coast. A similar Visitor Study was conducted during the summer of 2003 (report not completed at the time of publication of this draft plan) and is planned for completion every five years to continue to identify trends in visitor satisfaction. Some key findings and conclusions from the 1997 survey are contained in Appendix G.

Use levels have grown steadily in the area over the past three decades. In 1973, there were an estimated 1,000 visitor days on the Lost Coast Trail and 65,000 total King Range visitor days. By 1986, use of the Lost Coast Trail had increased to 3,200 visitor days, and by 1996 use numbers were estimated at 14,000 visitor days. In 2001, the Lost Coast Trail had an estimated 17,000 visitor days and the entire King Range had 150,000 visitor days (BLM Recreation Management Information System Data 2002).

Because the majority of King Range visitors come from outside the immediate area, it is important to consider recreation demand trends at a larger scale. Nationally, demand for non-consumptive outdoor recreation is generally increasing compared to consumptive types (Cordell 1999). This would include an increase in participation of many of the types of outdoor recreation available in the King Range such as hiking.

At the state level, a 1998 recreation study conducted by the California Department of Parks and Recreation (DPR) provides the most recent regional demand data for 43 recreation activities, including several activities that occur in the King Range (DPR 1998). Participants in the DPR study were asked to rank activities they would increasingly pursue if good opportunities were available, and the activities were then categorized according to level of demand; the results are listed in Table 3-21.

Table 3-21: Demand for Selected Recreation Activities in California

ACTIVITY	EXISTING DEMAND
Trail hiking	High
Mountain biking (unpaved surfaces)	Low
Driving for pleasure	Low
Primitive camping	High
Developed camping	High
Nature study/wildlife viewing	High
General use of open space	High
Picnicking	High
Beach activities	High
Fishing (freshwater)	High
Hunting	Low

Source: DPR 1998

3.15.4 Recreation Management Issues

3.15.4.1 Use Capacity at King Range Facilities

Black Sands Beach, Mal Coombs Park, and Mattole Beach are popular destinations for both local residents and visitors. Heavy use occurs at these easily accessible beach locations on summer weekends, and especially on Memorial Day, Fourth of July, and Labor Day weekends. At these times, facilities such as parking lots serving these sites reach or exceed their physical design capacity. Future use projections

indicate a need to consider either limiting use or expanding capacity at these locations. Currently, campgrounds are rarely filled, except at Mattole, which can reach capacity during summer weekends.

3.15.4.2 Use Levels of Lost Coast Trail and Big Flat

As discussed above, use along the Lost Coast Trail has been steadily increasing, reaching approximately 17,000 visitor days of use in 2002. In the Lost Coast Trail Backcountry Visitor Study, researchers found that camping was fairly well spread between ten locations along the coast; Big Flat received the most use of any campsite location along the coast, totaling 22 percent of all campsite use, followed by Gitchell Creek (14 percent) and Cooskie Creek (11 percent). At that time, 28 percent of users felt that controls were needed to limit the number of users on the Lost Coast Trail, and 47 percent of respondents believed that controls were not needed now, but that they should be imposed in the future if overuse occurs. The preferred method of controlling use was by achieving better spacing between groups rather than limiting access to the area. Visitors clearly did not want use to be controlled by the use of a lottery permit system, with over 60 percent of all visitors opposing this method. Over 60 percent of all visitors would support a first-come first-served or a mail reservation system for the delivery of a use permit system (Martin and Widner 1998).

The increasing intensity of recreational use on the King Range coast creates several management challenges, particularly between Big Flat and Shelter Cove. Big Flat has always experienced heavy use due to its location and unique setting. Big Flat features a major trail junction leading to and from King Peak, the distance from Shelter Cove makes it a desirable overnight campsite, fresh water is available, it is a renowned surfing location, and there is ample space for visitors to find campsites away from others. Although Big Flat receives heavier use than any other campsite on the Lost Coast, it can accommodate larger numbers of people. Over one hundred people were counted camping on Big Flat in one night during 2003 Memorial Day weekend. Greater impacts (overcrowding, sanitation issues, etc.) occur at Buck Creek and Shipman Creek, both very popular but much smaller sites. Many people backpacking from Mattole to Black Sands Beach or other routes prefer to camp at these locations to position themselves for a shorter hike out to Black Sands Beach or to avoid the high tide. Others start from Black Sands Beach camp at Gitchell Creek, Buck Creek, or Shipman Creek, and take day hikes up to Big Flat.

One particular use trend at Big Flat is the use of boats to access the area for one-day surfing trips, or to unload equipment and supplies for surfers or other groups of visitors wishing to camp at Big Flat for longer periods of time. Consequently, this new form of access allows people to bring more heavy equipment and gear than backpacking generally allows, and this has led to an increase in trash at the site. In the 1997 Lost Coast Trail Backcountry Visitor Study, respondents rated few potential management problems as "major" or "moderate," but litter was identified as a problem by 30 percent of all users (Martin and Widner 1998). In recent years, the BLM has removed between 500 and 1,000 pounds of trash annually from Big Flat including tarps, pots and pans, extra food, and miscellaneous garbage. However, BLM has no direct management authority over off-shore resources; mechanized boat use along the shore is legal, although the actual "landing" of watercraft on the beach, which is where BLM's jurisdiction begins, is not consistent with current management goals. It has also been observed that boat-in users occasionally have had trouble returning to their watercraft with their belongings, particularly if the weather is bad, and this may significantly contribute to the trash problem, as boaters are forced to hike out and cannot carry everything with them.

3.15.4.3 Sanitation

Sanitation, particularly in regard to human waste, is a growing problem at popular camping sites on the Lost Coast Trail, not only at Big Flat but also near the mouths of major creeks such as Buck Creek, Shipman Creek, and Cooskie Creek. Human waste directly adjacent to creeks and within or close to campsites is both an ecological and human health issue. Educational materials encourage coastal backcountry hikers to bury human waste on the beach in the wet sand below the high tide mark.

3.15.4.4 Campfires in Summer

As discussed in Section 3.15.2 (Applicable Regulatory Framework), fires are permitted in the King Range during much of the year, although campfire permits are required at all times for campfires and camping stoves. During declared fire season (usually starting July 1), campfires are prohibited, until rainstorms return to the Lost Coast, generally in early fall. Fires have been known to spread from campsites along the Lost Coast Trail to the west slope from poorly located or excessively large campfires. In particular, driftwood logs or open grasslands can be ignited if visitors build fires too close to them and wind can then spread the flames. Over the last few years, BLM has been improving education for visitors about the proper use of campfires. This includes building fires a safe distance from driftwood piles, selecting properly sized sticks and fuels to burn, and completely extinguishing fires with water instead of sand.

3.15.4.5 Conflicts/Crowding Among Recreational Users

Based on current management, there have been relatively few recent reports in the KRNCA of conflicts between user groups. In the 1997 Lost Coast Trail Backcountry Visitor Study, conflict between users was measured using an index of three questions: crowding, behavior of others, and resource impacts. Survey respondents felt that hiker groups, which were the most frequently encountered, were not a problem. In fact, only 12 percent of respondents indicated that they saw too many hikers. However, 27 percent said that the behavior of others interfered with their enjoyment of the Lost Coast Trail (Martin and Widner 1998). Most of this concern was attributed by respondents to vehicle use on the beach, which is no longer permitted.

Field observations indicate some conflicts may be attributable to group size on the Lost Coast Trail. The presence of large groups, although they make up a relatively small percentage of overall use, results in the over-crowding of isolated small camping spots like Buck Creek and Shipman Creek. In addition, larger groups have a higher impact on the level of solitude visitors feel when traveling the Lost Coast Trail. The 1997 Lost Coast Trail study found that the average group size on the trail was 3.1 people (Martin and Widner 1998). Preliminary data from a similar study completed in 2003 indicated that the majority of users preferred a maximum group size of 10 or fewer people (Martin 2003). As a result of the above concerns, limits have been set for Special Recreation Permittees, which usually represent the largest groups on the Lost Coast Trail. Current limits include group size, number of groups allowed from each trailhead, and limiting number of groups camping at smaller and/or more sensitive campsites.

3.16 INTERPRETATION AND EDUCATION

3.16.1 Introduction

The KRNCA's interpretive and educational program emphasizes the rugged isolation of the King Range and how dynamic physical processes influence its natural and cultural resource values, and explains the role of the BLM in maintaining those values while providing a diversity of recreation opportunities for the public (1992 Interpretive Prospectus). Interpretive materials are aimed at helping visitors appreciate the uniqueness of the King Range while learning to use the area in a safe and responsible manner. This may include preparing visitors for exploring the backcountry, such as conveying information about the highly variable weather, tides, and trail conditions, as well as suggesting strategies for better safety and preparedness on the trail. However, not all visitors have the time or the ability to experience the backcountry directly, and so for them, interpretive materials convey an understanding and appreciation of the primitive qualities of the area while remaining on the more developed margins.

3.16.2 Existing Facilities and Programs

As described in the Recreation section above, most developed sites and facilities in the King Range have associated interpretive materials, including extensive exhibits at the King Range Office. A fold-out glossy map is available for all visitors, which includes both basic geographic information plus brief descriptions of area resources, recreation opportunities, regulations for use, and safety suggestions. BLM also maintains kiosks at trailheads and other developed sites throughout the King Range with basic maps, area conditions, and natural history information. The information is updated seasonally, and is intended as an additional effort to communicate the basics of safety and preparedness to visitors, as well as to further encourage the "leave no trace" ethic.

Most developed recreation sites in the KRNCA feature interpretive panels intended as destinations for people interested in learning about on-site features, rather than emphasizing safety or general orientation to the area. These include two panels about archeological resources at Mattole Beach, panels at both the Punta Gorda and Cape Mendocino lighthouses on their particular histories, and a number of panels throughout Shelter Cove describing the area's history, marine mammals, and tidepools. There is also an interpretive trail between Nadelos and Wailaki campgrounds offering background on Native American stewardship and use of natural resources. In 2003, BLM developed interpretive panels for Black Sands Beach to educate day-use visitors about the KRNCA's natural processes and help prepare backpackers for hiking the Lost Coast Trail.

A number of King Range interpretive programs are designed specifically to involve local school children, to educate them about their surrounding ecosystems and create a stronger relationship with the KRNCA as well. An example was the Petrolia School coastal prairie education effort, where local kids first leaned about these unique habitats, and then developed interpretive signs to educate visitors about staying on the roads and protecting the prairies. Local classes have also adopted the Mattole Beach and have produced signs advocating a leave-no-trace ethic and respect for natural resources. Other school groups have adopted watersheds and participate in tree planting, stream turbidity monitoring, and a variety of other hands on resource management projects.

BLM staff, sometimes with interns or volunteers (see below), also conduct guided interpretive walks in the King Range, covering a wide variety of natural and cultural history subjects. Walks are offered routinely during the more popular summer months, then scaled back to on-demand tours during the rest of the year. Staff will also set up topical presentations for special groups, such as the American Hiking Society or a local basketweavers' group.

3.16.3 Local Collaboration and Partnerships

Significant education and interpretation is done in partnership with local organizations. For example, BLM works with the Lost Coast Interpretive Association (LCIA), a non-profit group who's purpose is to "provide education about and advocacy for the natural environment and cultural history of the Southern Humboldt and Northern Mendocino Coast, and the Mattole River Valley, for residents and visitors to the area" (LCIA Articles of Incorporation). In 2001 the BLM and LCIA jointly produced the "Lost Coast Adventure" video to educate visitors on planning a safe, low-impact backpacking trip along the coast. Other joint projects include local nature fairs and periodic theme-based educational programs for visitors and residents. Similarly, the non-profit Mattole Restoration Council works in partnership with the BLM to educate K-6 school children about watershed health and fisheries management.

In another collaborative effort, in 1999 BLM worked with the Cape Mendocino Lighthouse Preservation Society to relocate the lighthouse from its original location to Mal Coombs Park in Shelter Cove. The partnership project currently focuses on the development of interior and exterior interpretive and educational displays about the lighthouse's history and relocation. Also, Society members guide interpretive tours during the summer months.

BLM also has a number of programs aimed at helping community students gain technical and career-oriented skills. For example, BLM assists South Fork High School in nearby Miranda, CA, with its wildland fire fighting program, through which students can receive certification as trained fire fighters. BLM has a formal relationship with Humboldt State University (HSU) in order to place students in King Range internship (and other) positions, which both assist BLM in its management of the King Range and the education and career development of HSU students.

3.17 PUBLIC SAFETY AND EMERGENCY SERVICES

3.17.1 Existing Conditions

Emergency services providers including local volunteer fire departments, the Humboldt County Sheriffs Department, U. S. Coast Guard, California Department of Forestry and Fire Protection and the BLM respond to hazardous conditions and distress calls in the KRNCA. The dynamic processes of the ocean, intense storms, and steep topography of the coastal mountain range create challenges for both visitors and emergency response teams trying to access remote locations in the KRNCA.

The KRNCA does not possess an inordinate number of risks and dangers for visitors when compared to other remote public land locations. However, due to its coastal location, several hazards exist that are not commonly encountered by backcountry visitors in other areas. Foremost among these are tides and large ocean swells, which can render parts of the coastline impassible. Other hazards, common to many

backcountry areas, include steep trail segments with limited water supplies, loose sand and cobblestone footing, and swift stream-crossings. In addition, unpredictable natural hazards such as tsunamis, landslides, and earthquakes pose potential threats to King Range visitors, and so are management concerns for BLM and area emergency response organizations and agencies.

Each agency involved with emergency response maintains its own records; no formal interagency incident tracking system is in place. However, based on records compiled by the BLM, approximately eight to twelve search-and-rescue or emergency response incidents occur each year in the KRNCA (excluding fire and law enforcement actions). Most of these incidents take place along the coast and/or in the backcountry. In recent years, these incidents have covered a wide range of medical emergencies, including overexertion and dehydration, falls, drownings, hunting accidents and watercraft accidents.

The growing number of visitors each year is resulting in corresponding increased demands on emergency services providers. The nature of the area (unstable cliffs, large surf, etc.) also requires special skills, equipment, and training for emergency services personnel.

3.17.2 Current Management Practices

3.17.2.1 Emergency Agencies

The following agencies routinely assist the BLM in providing emergency services on public lands in the KRNCA:

- U.S. Coast Guard
- U.S. Forest Service (dispatch)
- California Department of Forestry and Fire Protection (fire protection and emergency response)
- Fortuna Emergency Command Center (interagency coordination)
- County of Humboldt Sheriff's Office
- County of Mendocino Sheriff's Office
- Shelter Cove, Honeydew and Petrolia Volunteer Fire Departments

Local volunteer fire departments play a vital role in emergency services and are often first on the scene at incidents. BLM has entered into Cooperative Assistance Agreements with the two departments, Shelter Cove and Petrolia, closest to the most popular access points to the KRNCA. As funding is available, the BLM assists these departments by providing equipment, training, and other resources. The closest hospitals are in Eureka and Garberville.

3.17.2.2 Emergency Responses

Search and rescue is a local county responsibility on public lands throughout the U.S., and the closest medical aid resources are dispatched to render medical assistance. In the KRNCA, 911 calls go to the Humboldt County Sheriff's Offices, who then call BLM, CDF, volunteer fire departments, and/or Coast Guard to assist with search operations and provide local knowledge of the area. Due to their proximity,

local volunteer fire departments often arrive to the scene before other agencies. The BLM assists these local fire departments by providing funding for training and equipment.

Response to any particular emergency incident in the KRNCA varies on a case-by-case basis, depending on the type and location of incident, weather conditions (for example, low fog can prevent helicopter use), the agency or organization initially contacted, and personnel available to respond. In some cases, BLM learns of backcountry injuries and emergency extractions well after the incident, particularly if the Coast Guard is the first responder.

3.17.2.3 Emergency Communications

All BLM public information materials direct visitors to dial 911 in case of emergency. Pay phones are located in the communities surrounding the KRNCA. An emergency phone was installed at the Black Sands Beach Trailhead in 2000 to improve emergency response times and reduce assistance requests on the surrounding residents.

Each agency maintains their own communication system and is assigned specific frequencies by the FCC. Frequencies of CDF, Forest Service, Coast Guard, and local volunteer fire departments are programmed into BLM radios to allow for scanning and communication. In addition, BLM has a cooperative agreement with the Forest Service for dispatch and monitoring of BLM frequencies. BLM law enforcement rangers also have access to California Highway Patrol and County Sheriff radio communications. BLM maintains radio repeater sites on Cooskie Mountain, Toth Road (Shelter Cove), and Pratt Mountain (Garberville) to provide radio coverage for the KRNCA. However, due to the area's topography, radio communication is limited, especially along the coast and interior valleys. Cell phones and satellite phones are used as backup communications.

3.17.2.4 Natural Disasters

The California Governor's Office of Emergency Services is responsible for assuring the state's readiness to respond to and recover from natural disasters, and for assisting local governments in their emergency preparedness, response, and recovery efforts. Under this program, disaster preparedness plans have been developed or are under development for Humboldt and Mendocino Counties to respond to a variety of natural disasters. Within Humboldt County, BLM has been assigned lead responsibility to warn public land visitors about an infrequent but very real threat: an earthquake-triggered tsunami. Due to the short warning timeframe for these events, there is no way to alert backcountry visitors to the approach of a tsunami, so efforts are focused on proactively educating visitors about proper responses (climbing to higher ground away from the coast if they have felt an earthquake) at trailhead kiosks.

3.17.2.5 Prevention–Safety Education Programs

A significant component of the KRNCA's safety program focuses on prevention, providing information and education to make backcountry visitors aware of possible hazards and proper preparation for area conditions. Although no data is available to measure the effectiveness of this program, the ratio of search and rescue incidents is relatively low when compared with the level of visitation. Area brochures and the KRNCA website inform visitors of potential hazards unique to the King Range and how to prepare for and/or avoid them. Kiosks at trailheads contain additional safety/current condition

information, such as tide charts and trail closure/condition advisories. Registers are also located at each trailhead to assist search and rescue teams in locating visitors.

Observations have indicated that an inordinate number of search and rescue efforts have been required for clients of organized group permittees. To reverse this trend, additional orientation materials have been targeted to these visitors, and groups are now required to view an orientation and safety video.

3.18 SOLID AND HAZARDOUS WASTE MANAGEMENT

Solid and hazardous waste management practices in the King Range are regulated under both state and federal law. The state and federal laws and regulations that address waste management in the King Range are:

- Resource Conservation and Recovery Act (federal)
- California Health and Safety Code, Title 22

The BLM currently complies with all pertinent laws and regulations regarding solid and hazardous waste disposal. Non-hazardous solid waste is routinely collected from receptacles and facilities by BLM personnel or contractors and transported to a properly licensed and operated waste transfer station. The BLM does not burn waste or dispose of waste on-site. Occasionally, illegal dumping occurs on public land within the King Range. The waste is disposed properly by the BLM and, when feasible, the responsible party is identified and legal remedies are sought. Another source of potentially hazardous waste is flotsam and jetsam that washes up along the KRNCA shoreline. Oil drums and other containers containing potentially hazardous materials occasionally wash onto the beach corridor. These items are removed and disposed of properly. No known landfills or other hazardous waste sites are known to occur on public lands in the KRNCA.

Currently, the volume of hazardous waste that is generated in the King Range does not exceed the small quantity generator threshold. The small volume of hazardous waste that is generated at the King Range Administrative Facility is either recycled or disposed through the Humboldt County Small Quantity Generator Program. The hazardous waste stream consists of used motor oil, expired or obsolete hazardous materials such as paint, solvents, batteries, and lubricants. Used motor oil is routinely collected by a properly licensed hauler and transported to a recycling facility. Personnel associated with the King Range have also been identifying less-toxic alternatives to hazardous materials that have been used traditionally.

Due to the remote nature of the King Range, only certain non-hazardous waste streams (paper, aluminum, and glass) can be economically recycled. Currently, most King Range public facilities are not equipped with receptacles for recyclable materials. As stated above, when possible, excess hazardous materials are recycled through the Humboldt County Small Quantity Generator Program which collects and provides excess paint and similar hazardous materials free to the public.